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Peter D. J. Dennis

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EXAMINER

FOWLKES, ANDRE R

ART UNIT

PAPER NUMBER

2122

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/944,311

Applicant(s)

DENNIS ET AL.

Examiner

Andre R. Fowlkes

Art Unit

2122

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-13,15-21,23 and 24 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-5,7-13,15-21,23 and 24 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 30 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the amendment filed 10/14/04.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1-5, 7 & 8 rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art, (AAPA), in the background section of the instant application in view of Parlante, "Linked List Basics", Stanford CS Education Library. The PGPUB application paragraph and line numbers are used to cite the AAPA reference.

As per claim 1, AAPA discloses **a method to facilitate debugging computer code within an operating system kernel** (§ 0006:1-4, "In an effort to provide debugging capabilities for the operating system kernel, engineers have created a modular debugger, which can facilitate debugging the operating system kernel"), **comprising:**

- receiving a source file containing a data structure definition (§ 0007:3-5,
“examines the source files of the operating system kernel to determine the data
structures within the kernel”),

- searching the source file for the data structure definition (§ 0007:3-5,
“examines the source files of the operating system kernel to determine the data
structures within the kernel”),

**- upon finding the data structure definition, saving the data structure
definition in a storage structure (§ 0006:7-8, “this gathered data can then be saved in
the computer system’s memory”),**

**- generating a new source code to display a data structure, wherein the
new source code is created using the data structure definition (§ 0006:5-10,**
“(generating new) ... source code, which is custom designed, (per the data structure
definition), to gather data for the data structures within the operating system (and) ...
display or print the gathered data”),

**- compiling the new source code into an executable module; installing the
executable module into a modular debugger (§ 0008:1-5, “after creating this source
code, the operator compiles the source code into an executable module , which is then
inserted into the modular debugger”),**

**- during execution of the modular debugger, displaying a content of the
data structure to a user of the modular debugger using the executable module,
whereby the user is able to view the content of the data structure (§ 0008:3-5, “(the
modular debugger is operable) to gather data from the data structures within the kernel**

while the kernel is executing”, and ¶ 0008:7-10, “This gathered data can then be ... display(ed)”).

- **wherein generating the new source code includes generating source code to traverse data structures** (¶ 0006:5-10, “(generating new) ... source code, which is custom designed, to gather data for the data structures within the operating system”).

AAPA doesn't explicitly disclose generating source code to **walk a linked list** of data structures.

However, Parlante, in an analogous environment, discloses generating source code to **walk a linked list** of data structures (p. 17:6-7, “A very frequent technique in linked list (source) code is to iterate (i.e. walk) a pointer over all the nodes (i.e. data structures) in a (linked) list”).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to incorporate the teachings of Parlante into the system of AAPA to generating source code to **walk a linked list** of data structures. The modification would have been obvious because one of ordinary skill in the art would have wanted to generate source code that is able to completely gather data from any type of data structure used (in this case the data structure used is a linked list).

As per claim 2, the rejection of claim 1 is incorporated and further, AAPA discloses that **receiving the source file includes receiving a plurality of source files**

(¶ 0007:3-5, “examines the source files of the operating system kernel to determine the data structures within the kernel”).

As per claim 3, the rejection of claim 1 is incorporated and further, AAPA discloses that **the source file contains a plurality of data structures** (¶ 0006:5-10, to gather data for the data structures within the operating system (and) ... display or print the gathered data”).

As per claim 4, the rejection of claim 3 is incorporated and further, AAPA discloses that **saving the data structure definition in the storage structure includes saving the plurality of data structures in the storage structure** (¶ 0007:3-5, “examines the source files of the operating system kernel to determine the data structures within the kernel”, and ¶ 0006:7-8, “this gathered data (structures) can then be saved in the computer system’s memory”).

As per claim 5, the rejection of claim 3 is incorporated and further, AAPA discloses that **generating the new source code includes: examining the plurality of data structures in the storage structure to locate a cross-reference between data structures; and generating the new source code for the plurality of data structures** (¶ 0007:3-5, “examines the source files of the operating system kernel to determine the data structures within the kernel”, and ¶ 0006:5-10, “(generating new) ...

source code, which is custom designed, (per the data structures and reference data), to gather data for the data structures within the operating system”).

As per claim 7, the rejection of claim 6 is incorporated and further, AAPA discloses that **displaying the content of the data structure includes displaying the content of the linked list of data structures** (§ 0006:5-10, “(generating new) ... source code, which is custom designed, (per the data structures and reference data), to gather data for the data structures (i.e. linked list of data structures) within the operating system (and) ... display or print the gathered data”).

As per claim 8, the rejection of claim 1 is incorporated and further, AAPA discloses that **the data structure definition includes one of a tree, a linked list, a doubly linked list, and a queue** (§ 0006:6, “data structures (i.e. trees, linked lists, doubly linked lists, queues”).

4. Claims 9-13, 15-21 & 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art, (AAPA), in the background section of the instant application, in view of Parlante, “Linked List Basics”, Stanford CS Education Library, further in view of Vazquez et al., (Vazquez), U.S. Patent No. 6,763,515.

As per claim 9, AAPA discloses **a method to facilitate debugging computer code within an operating system kernel** (§ 0006:1-4, “In an effort to provide

debugging capabilities for the operating system kernel, engineers have created a modular debugger, which can facilitate debugging the operating system kernel”),
comprising:

- **receiving a source file containing a data structure definition** (§ 0007:3-5, “examines the source files of the operating system kernel to determine the data structures within the kernel”),
- **searching the source file for the data structure definition** (§ 0007:3-5, “examines the source files of the operating system kernel to determine the data structures within the kernel”),
- **upon finding the data structure definition, saving the data structure definition in a storage structure** (§ 0006:7-8, “this gathered data can then be saved in the computer system’s memory”),
- **generating a new source code to display a data structure, wherein the new source code is created using the data structure definition** (§ 0006:5-10, “(generating new) ... source code, which is custom designed, (per the data structure definition), to gather data for the data structures within the operating system (and) ... display or print the gathered data”),
- **wherein generating the new source code includes generating source code to traverse data structures** (§ 0006:5-10, “(generating new) ... source code, which is custom designed, to gather data for the data structures within the operating system”),
- **compiling the new source code into an executable module; installing the executable module into a modular debugger** (§ 0008:1-5, “after creating this source

code, the operator compiles the source code into an executable module , which is then inserted into the modular debugger”),

- **during execution of the modular debugger, displaying a content of the data structure to a user of the modular debugger using the executable module, whereby the user is able to view the content of the data structure** (§ 0008:3-5, “(the modular debugger is operable) to gather data from the data structures within the kernel while the kernel is executing”, and § 0008:7-10, “This gathered data can then be ... display(ed)”).

AAPA doesn't explicitly disclose generating source code to **walk a linked list** of data structures.

However, Parlante, in an analogous environment, discloses generating source code to **walk a linked list** of data structures (p. 17:6-7, “A very frequent technique in linked list (source) code is to iterate (i.e. walk) a pointer over all the nodes (i.e. data structures) in a (linked) list”).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to incorporate the teachings of Parlante into the system of AAPA to generating source code to **walk a linked list** of data structures. The modification would have been obvious because one of ordinary skill in the art would have wanted to generate source code that is able to completely gather data from any type of data structure used (in this case the data structure used is a linked list).

AAPA doesn't explicitly disclose **a computer readable storage medium storing instructions that when executed by a computer cause the computer to perform** the algorithm listed above.

However, Vazquez, in an analogous environment, discloses **a computer readable storage medium storing instructions that when executed by a computer cause the computer to perform** an algorithm (col. 4:7-8, "providing a system and method for automatically generating a program to perform an ... algorithm").

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to incorporate the teachings of Vazquez into the AAPA/Parlante system to have **a computer readable storage medium storing instructions that when executed by a computer cause the computer to perform an algorithm**. The modification would have been obvious because one of ordinary skill in the art would want to use the well known technique of automating a manual algorithm using computer software, to attain speed and consistency.

As per claims 10-13, 15 & 16, this is a computer readable medium version of the claimed method discussed above, in claims 2-5, 7 & 8, wherein all claimed limitations have also been addressed and/or cited as set forth above. For example, see AAPA (§ 0006:1-0008:5).

As per claims 17-21, 23 & 24, this is an apparatus version of the claimed method discussed above, in claims 9-13, 15 & 16, wherein all claimed limitations have also

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been addressed and/or cited as set forth above. For example, see AAPA (§ 0006:1-0008:5).

Response to Arguments

5 Applicant's arguments with respect to claims 1, 9 and 17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

7. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andre R. Fowlkes whose telephone number is (571) 272-3697. The examiner can normally be reached on Monday - Friday, 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571)272-3695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ARF



TUAN DAM
SUPERVISORY PATENT EXAMINER